IN THE CLAIMS:

Applicant is not amending, cancelling, or adding any claims. However, the Notice of Allowance dated May 4, 2005 indicates that claims 1-13, 15-20, 22, 23, and 25 have been allowed. Applicant believes that claims 15 and 16 were cancelled in an amendment filed on March 9, 2005. To make the record clear, set forth below are the pending claims in the form Applicant believes the Examiner intended to allow them by the Notice of Allowance dated May 4, 2005.

1. (Previously Presented) A method of determining a recording velocity of a signal by a write laser beam onto an optical disc, the method comprising the steps of:

undergoing a test recording of a signal onto a predetermined area of the optical disc prior to an actual recording at one or more levels of the recording velocity;

reproducing the signal by a read laser beam from the predetermined area of the optical disc;

generating a first characteristic at one or more levels of the recording velocity based on the reproduced signal, the first characteristic representing a relation between an optical feature of the laser beam and a qualitative parameter of a recording state of the signal, the optical feature being expressed in terms of either a β value obtained from the read laser beam reflected back from the optical disc or a power of the writing laser beam;

generating a second characteristic from the first characteristic based on a predetermined preferable range of the qualitative parameter, such that the second characteristic represents a relation between the recording velocity and an available range of the optical feature corresponding to the predetermined preferable range of the

qualitative parameter of the recording state; and

determining a preferable value of the recording velocity according to the second characteristic and a predetermined preferable range of the optical feature which is predetermined to obtain a preferable recording state.

2. (Previously Presented) The method according to claim 1, further comprising storing a plurality of preferable ranges of the qualitative parameter and a plurality of preferable ranges of the optical feature in correspondence with a plurality of types of optical discs, and detecting the type of the optical disc under the test recording, such that generating the second characteristic uses the optical range of the qualitative parameter corresponding to the detected type of the optical disc, and determining the preferable value of the recording velocity uses the preferable range of the optical feature corresponding to the detected type of the optical disc.

3. (Previously Presented) The method according to claim 1, wherein generating the first characteristic adopts the qualitative parameter selected from the group consisting of a frequency of detecting a frame synchronization signal contained in the signal reproduced from the optical disc, a CI error contained in the reproduced signal, a jitter value of the reproduced signal, a deviation of the reproduced signal, a degree of modulation applied to the laser beam, a reflectance of the laser beam from the optical disc and an amplitude of the reproduced signal.

4. (Previously Presented) An apparatus for recording a signal onto an optical disc by a write laser beam at a recording velocity, the apparatus comprising:

a test recording section that undergoes a test recording of a signal onto a predetermined area of the optical disc prior to an actual recording at one or more levels

of the recording velocity;

a reproducing section that reproduces the signal by a read laser beam from the predetermined area of the optical disc;

a first generating section that generates a first characteristic at one or more levels of the recording velocity based on the reproduced signal, the first characteristic representing a relation between an optical feature of the laser beam and a qualitative parameter of a recording state of the signal, the optical feature being expressed in terms of either a β value obtained from the read laser beam reflected back from the optical disc or a power of the writing laser beam;

a second generating section that generates a second characteristic from the first characteristic based on a predetermined preferable range of the qualitative parameter, such that the second characteristic represents a relation between the recording velocity and an available range of the optical feature corresponding to the predetermined preferable range of the qualitative parameter of the recording state; and

a determining section that determines a preferable value of the recording velocity according to the second characteristic and a predetermined preferable range of the optical feature which is predetermined to obtain a preferable recording state.

5. (Previously Presented) The apparatus according to claim 4, further comprising:

a storing section that stores a plurality of preferable ranges of the qualitative parameter and a plurality of preferable ranges of the optical feature in correspondence with a plurality of types of optical discs; and

a detecting section that detects the type of the optical disc under the test recording, such that the second generating section uses the optical range of the

qualitative parameter corresponding to the detected type of the optical disc, and the determining section uses the preferable range of the optical feature corresponding to the detected type of the optical disc.

6. (Previously Presented) The apparatus according to claim 4, wherein the first generating section adopts the qualitative parameter selected from the group consisting of a frequency of detecting a frame synchronization signal contained in the signal reproduced from the optical disc, a C1 error contained in the reproduced signal, a jitter value of the reproduced signal, a deviation of the reproduced signal, a degree of modulation applied to the laser beam, a reflectance of the laser beam from the optical disc and an amplitude of the reproduced signal.

7. (Previously Presented) The apparatus according to claim 4, further comprising:

a setting section that is operated by a user for setting a desired recording velocity; and

a judging section that judges whether the actual recording of the signal onto the optical disc at the desired recording velocity is possible according to the determined preferable value of the recording velocity.

8. (Original) The apparatus according to claim 7, further comprising an adjusting section operative when the judging section judges that the actual recording is not possible since the desired recording velocity exceeds the preferable recording velocity, for shifting the desired recording velocity below the preferable recording velocity so as to enable the recording of the signal.

9. (Original) The apparatus according to claim 8, further comprising a predicting section that predicts a time necessary for the recording at the shifted recording velocity,

and an indicating section that indicates the predicted time to the user.

10. (Original) The apparatus according to claim 4, further comprising:

a driving section that operates in the recording of the signal for selectively driving the optical disc in either of a CLV mode where the optical disc is rotated at a constant linear velocity or a CAV mode where the optical disc is rotated at a constant angular velocity; and

a control section that controls the driving section to switch between the CLV mode and the CAV mode according to the determined preferable recording velocity.

11. (Previously Presented) A computer program for use in a disc apparatus having a processor for recording a signal onto an optical disc by a write laser beam at a preferable recording velocity, the computer program being executed by the processor for enabling the disc apparatus to perform a process comprising:

undergoing a test recording of a signal onto a predetermined area of the optical disc prior to an actual recording at one or more levels of the recording velocity;

reproducing the signal by a read laser beam from the predetermined area of the optical disc;

generating a first characteristic at one or more levels of the recording velocity based on the reproduced signal, the first characteristic representing a relation between an optical feature of the laser beam and a qualitative parameter of a recording state of the signal, the optical feature being expressed in terms of either a β value obtained from the read laser beam reflected back from the optical disc or a power of the writing laser beam;

generating a second characteristic from the first characteristic based on a

predetermined preferable range of the qualitative parameter, such that the second characteristic represents a relation between the recording velocity and an available range of the optical feature corresponding to the predetermined preferable range of the qualitative parameter of the recording state; and

determining a preferable value of the recording velocity according to the second characteristic and a predetermined preferable range of the optical feature which is predetermined to obtain a preferable recording state.

12. (Previously Presented) A method of determining a power of a writing optical beam used for recording of a signal onto an optical disc, the method comprising:

undergoing a test recording of a signal onto a predetermined test area of the optical disc prior to an actual recording;

reproducing the signal from the predetermined test area of the optical disc;

generating a first recording characteristic according to the reproduced signal, wherein the first characteristic represents a characteristic of a β value as a function of the power of the writing optical beam, and wherein the β value is derived from an amplitude of the reproduced signal;

obtaining from the first recording characteristic a second recording characteristic, wherein the second characteristic represents a characteristic of a $\Delta\beta$ as a function of the power of the writing optical beam, and wherein the $\Delta\beta$ indicates a variation of the β value in the first characteristic per a unit amount of the power of the writing optical beam;

determining a recording power range according to the obtained second recording characteristic using a preferable range of $\Delta\beta$, which is predetermined for realizing a

preferable recording, such that the power of the writing optical beam is determined within the recording power range; and

determining a preferable power of the writing optical beam according to the first recording characteristic and within the recording power range.

13. (Previously Presented) The method according to claim 12, further comprising:

generating a third recording characteristic according to the reproduced signal, representing a relation between the power of the writing optical beam and at least one of a plurality of qualitative parameters being associated with a quality of the recording and being selected from a group consisting of a frequency of detecting a frame synchronization signal contained in the signal reproduced from the optical disc, a C1 error contained in the reproduced signal, a jitter value of the reproduced signal, a deviation of the reproduced signal, a degree of modulation applied to the laser beam, a reflectance of the laser beam from the optical disc and an amplitude of the reproduced signal, wherein determining comprises determining the recording power range according to the generated third recording characteristic in addition to the obtained second recording characteristic.

14. (Previously Cancelled)

15. (Previously Cancelled)

16. (Previously Cancelled)

17. (Previously Presented) The method according to claim 12, wherein reproducing comprises reproducing the signal at a reading rate which is set smaller than a writing rate of the signal at the test recording.

18. (Previously Presented) The method according to claim 17, wherein reproducing

comprises reproducing a plurality of the signals by undergoing a plurality of reproducing sessions on the test area.

19. (Previously Presented) An apparatus for recording a signal onto an optical disc by a writing optical beam having a preferable power, the apparatus comprising:

a test recording section that undergoes a test recording of a signal onto a predetermined test area of the optical disc prior to an actual recording;

a reproducing section that reproduces the signal from the predetermined test area of the optical disc;

a generating section that generates a first recording characteristic according to the reproduced signal wherein the first recording characteristic represents a characteristic of a β value as a function of the power of the writing optical beam, and wherein the β value is derived from an amplitude of the reproduced signal; the generating section further generates from the first recording characteristic a second recording characteristic wherein the second characteristic represents a characteristic of a Δβ as a function of the power of the writing optical beam, and wherein the Δβ indicates a variation of the β value in the first recording characteristic per a unit amount of the power of the writing optical beam; and

a determining section that determines a recording power range according to the second recording characteristic using a preferable range of Δβ, which is predetermined for realizing a preferable recording, such that the power of the writing optical beam is determined within the recording power range, and that further determines a preferable power of the writing optical beam according to the first recording characteristic and within the recording power range.

20. (Previously Presented) An apparatus for recording a signal onto an optical disc by a writing optical beam having a preferable power, the apparatus comprising:

a test recording section that undergoes a test recording of a signal onto a predetermined test area of the optical disc prior to an actual recording;

a reproducing section that reproduces the signal from the predetermined test area of the optical disc;

a generating section that generates a first recording characteristic according to the reproduced signal, wherein the first characteristic represents a characteristic of a β value as a function of the power of the writing optical beam, the β value is derived from an amplitude of the reproduced signal, the generating section generates a second recording characteristic from the first characteristic, the second characteristic represents a characteristic of a Δβ as a function of the power of the writing optical beam, the Δβ indicates a variation of the β value in the first characteristic per a unit amount of the power of the writing optical beam, the generating section generates a third recording characteristic according to the reproduced signal, representing a relation between the power of the writing optical beam and at least one of a plurality of qualitative parameters being associated with a quality of the recording and being selected from a group consisting of a frequency of detecting a frame synchronization signal contained in the signal reproduced from the optical disc, a CI error contained in the reproduced signal, a jitter value of the reproduced signal, a deviation of the reproduced signal, a degree of modulation applied to the laser beam, a reflectance of the laser beam from the optical disc and an amplitude of the reproduced signal; and

a determining section that determines a recording power range according to the

second recording characteristic and the third recording characteristic using a preferable range of $\Delta\beta$, which is predetermined for realizing a preferable recording, such that the power of the writing optical beam is determined within the recording power range and determines a preferable power of the writing optical beam according to the first recording characteristic, the second recording characteristic, and the third recording characteristic and within the recording power range.

21. (Previously Cancelled)

22. (Previously Presented) A computer program for use in a disc apparatus having a processor for recording a signal onto an optical disc by a writing optical beam having a preferable power, the computer program being executable by the processor for enabling the disc apparatus to perform a process comprising:

undergoing a test recording of a signal onto a predetermined test area of the optical disc prior to an actual recording;

reproducing the signal from the predetermined test area of the optical disc;

generating a first recording characteristic according to the reproduced signal, wherein the first recording characteristic represents a characteristic of a β value as a function of the power of the writing optical beam, and wherein the β value is derived from an amplitude of the reproduced signal;

obtaining from the first recording characteristic a second recording characteristic wherein the second characteristic represents a characteristic of a $\Delta\beta$ as a function of the power of the writing optical beam, and wherein the $\Delta\beta$ indicates a variation of the β value in the first recording characteristic per a unit amount of the power of the writing optical beam;

determining a recording power range according to the obtained second recording characteristic using a preferable range of $\Delta\beta$, which is predetermined for realizing a preferable recording, such that the power of the writing optical beam is determined within the recording power range; and

determining a preferable power of the writing optical beam according to the first recording characteristic and within the recording power range.

23. (Previously Presented) A computer program for use in a disc apparatus having a processor for recording a signal onto an optical disc by a writing optical beam having a preferable power, the computer program being executable by the processor for enabling the disc apparatus to perform a process comprising:

undergoing a test recording of a signal onto a predetermined test area of the optical disc prior to an actual recording;

reproducing the signal from the predetermined test area of the optical disc;

generating a first recording characteristic according to the reproduced signal, wherein the first characteristic represents a characteristic of a β value as a function of the power of the writing optical beam, and wherein the β value is derived from an amplitude of the reproduced signal;

obtaining from the first recording characteristic a second recording characteristic, wherein the second characteristic represents a characteristic of a $\Delta\beta$ as a function of the power of the writing optical beam, and wherein the $\Delta\beta$ indicates a variation of the β value in the first characteristic per a unit amount of the power of the writing optical beam;

generating a third recording characteristic according to the reproduced signal,

representing a relation between the power of the writing optical beam and at least one of a plurality of qualitative parameters being associated with a quality of the recording and being selected from a group consisting of a frequency of detecting a frame synchronization signal contained in the signal reproduced from the optical disc, a C1 error contained in the reproduced signal, a jitter of the reproduced signal, a deviation of the reproduced signal, a degree of modulation applied to the laser beam, a reflectance of the laser beam from the optical disc and an amplitude of the reproduced signal; and

determining a recording power range according to the second recording characteristic and the third recording characteristic using a preferable range of $\Delta\beta$, which is predetermined for realizing a preferable recording, such that the power of the writing optical beam is determined within the recording power range and determines a preferable power of the writing optical beam according to the first recording characteristic, the second recording characteristic, and the third recording characteristic and within the recording power range.

24. (Previously Cancelled)

25. (Previously Presented) The method according to claim 12, wherein determining comprises determining the recording power range which is split into a higher side and a lower side, and wherein determining comprises determining the preferable power of the writing optical beam within the lower side of the determined recording power range.